APPENDIX

1. (Amended) A liquid composition of matter that is suitable as electrolyte for a nonsludging electrolytic zinc phosphate treatment process, said liquid composition comprising water, dissolved phosphoric acid, dissolved nitric acid, dissolved zinc cations, *m* chemically distinct species of cations other than zinc, and *n* chemically distinct species of anions other than anions derivable by ionization of phosphoric and nitric acids, each of *m* and *n* independently being zero or a positive integer, the concentration of zinc in moles per liter in said liquid composition satisfying the following mathematical condition:

$$\{Zn\} \leq 0.3\ \{H_3PO_4\} + 0.5\ \{HNO_3\} - 0.5 \sum_{i=0}^{m} p_i C_i + 0.5 \sum_{j=0}^{n} q_j A_j$$

in which: "{Zn}", "{H_3PO_4}", and "{HNO_3}" respectively represent the zinc, phosphoric acid, and nitric acid concentrations in mol/L; each of C_0 and A_0 is zero; each of p_0 and q_0 is 1; if *m* is not zero, for each positive integer *i* from 1 to *m*, C_i represents the concentration in mol/L of the *i*th distinct cation species other than zinc present in the bath and p_i represents the cationic valence of said *i*th distinct cation species; and if *n* is not zero, for each positive integer *j* from 1 to *n*, A_j represents the concentration in mol/L of the *j*th distinct anion species other than anions derivable by ionization of phosphoric or nitric acids present in the bath and q_j represents the anionic valence of said *j*th distinct anion species;

- the phosphoric acid concentration is from 0.25 to 0.50 mol/L;
- the nitric acid concentration is from 0.65 to 0.90 mol/L; and
- $\{Zn\} \geq 0.27\ \{H_3PO_4\} + 0.45\ \{HNO_3\} - 0.45 \sum_{i=0}^{m} p_i C_i + 0.45 \sum_{j=0}^{n} q_j A_j$.

12. (Amended) A liquid composition that is suitable as electrolyte for a nonsludging electrolytic zinc phosphate treatment process, said liquid composition comprising water, at least 0.10 mol/L dissolved phosphoric acid, at least 0.3 mol/L [0.10 mol/L] dissolved nitric acid, dissolved zinc cations, *m* chemically distinct species of cations other than zinc, and *n* chemically distinct species of anions other than anions derivable by ionization of phosphoric and nitric acids, each of *m* and *n* independently being zero or a positive integer, the concentration of zinc in moles per liter in said liquid composition satisfying both of the following mathematical

conditions:

$$\{Zn\} \leq 0.3\ \{H_3PO_4\} + 0.5\ \{HNO_3\} - 0.5 \sum_{i=0}^{m} p_i C_i + 0.5 \sum_{j=0}^{n} q_j A_j;\ \text{and}$$

$$\{Zn\} \geq 0.15\ \{H_3PO_4\} + 0.25\ \{HNO_3\} - 0.25 \sum_{i=0}^{m} p_i C_i + 0.25 \sum_{j=0}^{n} q_j A_j.$$

in which : "{Zn}", "$\{H_3PO_4\}$", and "$\{HNO_3\}$" respectively represent the zinc, phosphoric acid, and nitric acid concentrations in mol/L; each of C_0 and A_0 is zero; each p_0 and q_0 is 1; if *m* is not zero for each positive integer *j* from 1 to *m*, C_j represents the concentration in mol/L of the *j*th distinct cation species other than zinc present in the bath and p_j represents the cationic valence of said *j*th distinct cation species; and if *n* is not zero, for each positive integer *j* from 1 to *n*, A_j represents the concentration in mol/L of the *j*th distinct anion species other than anions derivable by ionization of phosphoric or nitric acids present in the bath and q_j represents the anionic valence of said *j*th distinct anion species, wherein $\{Zn\}/\{H_3PO_4\} < 0.91$.